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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • SEPTEMBER 29, 1945

Fall Fruit

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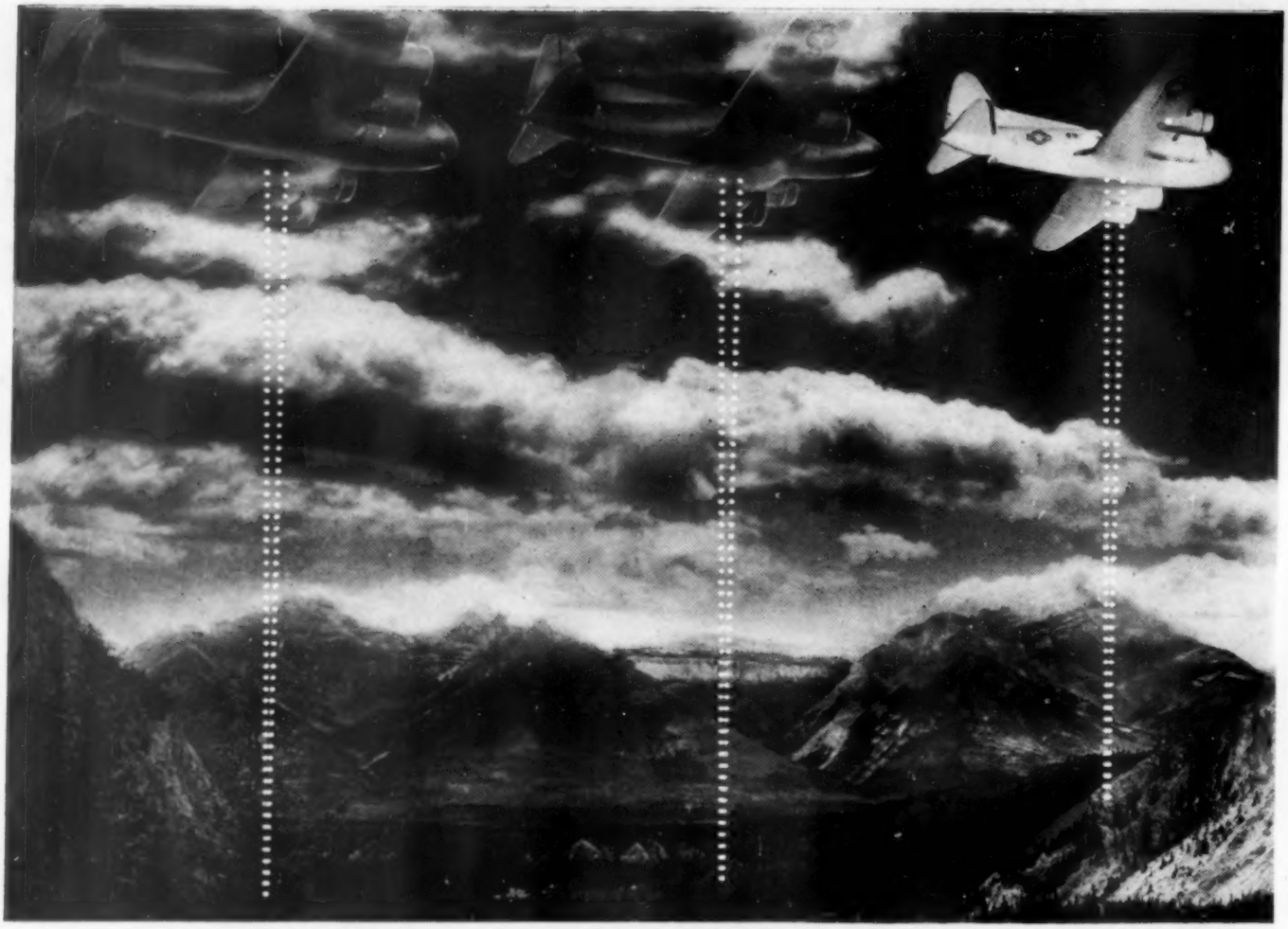
A SCIENCE SERVICE PUBLICATION



The RCA Radio Altimeter assures that the last mountains have been passed before letting down to the airport in the valley below.

Measuring "every bump on the landscape" —at 20,000 Feet!

A radio altimeter—that indicates the exact height above land or sea—is another RCA contribution to aviation.

Old-style altimeters gave only the approximate height above sea level—did not warn of unexpected "off-course" mountains.

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All the radio altimeters used in Army, Navy and British aircraft were designed and first produced by RCA. This same pioneering research goes into *every* RCA product. So when you buy an RCA Victor radio, Victrola, television receiver, even a radio tube replacement, you enjoy a unique pride of ownership. For you know it is one of the finest instruments of its kind that science has yet achieved.

Radio Corporation of America, Radio City, New York 20. *Listen to The RCA Show, Sunday, 4:30 P. M., E. T., over NBC.*

The RCA radio altimeter will be a major contribution to the safety of post-war commercial flying. The section at the left sends the radio waves to earth and back again while the "box" at the right—timing these waves to the millionth of a second—tells the navigator the plane's exact height in feet.

RCA **RADIO CORPORATION of AMERICA**

MEDICINE

Streptomycin for TB

Limited suppressive effect has been obtained, but no one knows what final answer will be. Warning comes not to hope for too much.

➤ STREPTOMYCIN, penicillin-like medical weapon which proved strikingly effective in controlling tuberculosis in guinea pigs, has now been given to 34 human patients suffering from this disease.

The results of this first trial of the remedy in human tuberculosis are reported by Dr. H. C. Hinshaw and Dr. W. H. Feldman, of the Mayo Clinic and Foundation in the *Proceedings of the Staff Meetings* of the Mayo Clinic.

A "limited suppressive effect" on the disease, especially in some of the more unusual types of tuberculosis, was obtained through streptomycin treatment.

Many of the cases in which streptomycin was tried were apparently hopeless. In these the drug brought about some improvement and perhaps prolonged the lives of the patients. Yet nowhere in the report is there any statement to justify hailing this new drug as a swift and sure cure for tuberculosis.

An unusual feature of the report is the inclusion of a paragraph indirectly addressed to lay persons. In this the scientists, who obviously restrained their report to the most conservative statements, urge the layman who may hear of it to adopt "the same cautious frame of mind." In other words, not too much hope should be aroused by the results so far.

"No one as yet knows what the final judgment will be concerning the effect of streptomycin on clinical tuberculosis," they state.

Care in a sanatorium and collapse therapy, proved and effective methods of treating tuberculosis, should "in no instance" be abandoned for treatment with streptomycin or other antibacterial substances whose value has not yet been conclusively shown.

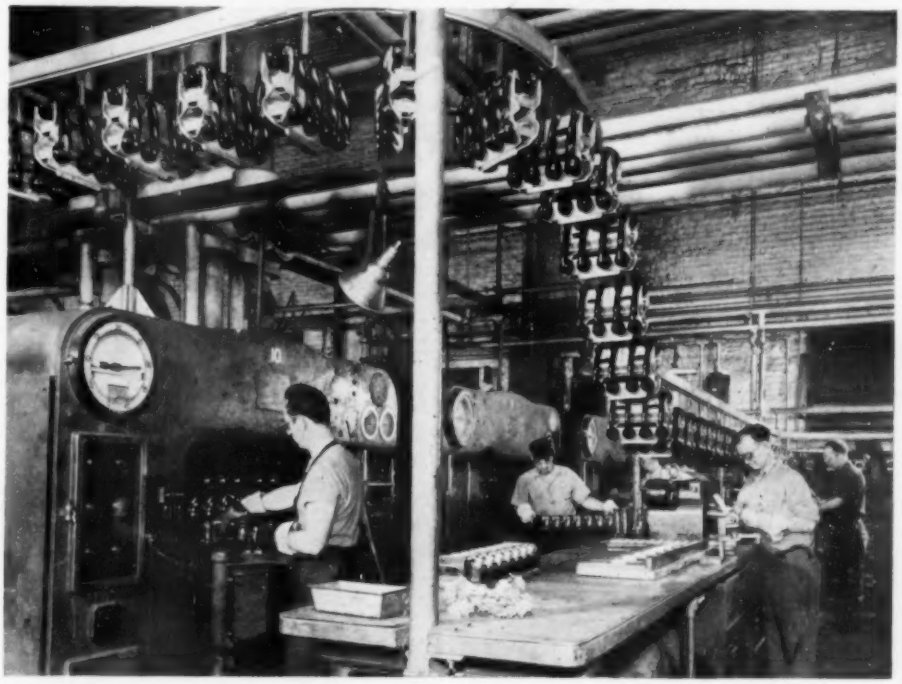
Very much in favor of streptomycin is its safety, as shown by study of the 34 patients to whom it was given by injection into the muscles every three hours and in some cases for several weeks without interruption. Most patients complained of feeling a little sick and of aching muscles and pain where the injections were made. The pain is no worse than that produced by penicillin. Since most of the patients to whom streptomycin was given had little chance for rapid recovery, if any, they did not mind the discomfort of the new treatment that might help them. As more purified lots of streptomycin have become available, there have been less severe reactions to it.

Streptomycin seems to have the best effect in patients with unusual and particularly dangerous forms of tuberculosis, such as tuberculosis of kidneys and bladder and the type known medically as miliary tuberculosis. In miliary tuberculosis the disease is not limited to the lungs but is spread through the body by the blood stream and usually is rapidly fatal.

In two patients with this form of tuberculosis, one of whom also had tuberculosis of the kidneys, "unmistakable and striking improvement" of the tuberculous condition of the lungs appeared in X-ray pictures. Improvement in the general condition of the patients, however, did not parallel that shown in the chest X-rays, and the physicians believe the disease has become localized in some inaccessible regions of the body.

Encouraging results were obtained when streptomycin was given to four patients with tuberculosis of the bladder or kidneys. Each of these had only one kidney, the other having been removed because of the tuberculous condition. Each was excreting tuberculosis germs before streptomycin treatment was started. This stopped within two to four weeks and no germs have been found up to four months after the drug was stopped.

Some of the patients with tuberculosis of the lungs, on the other hand, although they seem to respond to streptomycin, apparently are better only so long as they are taking the drug. In some cases the tuberculous process is reactivated promptly after treatment is stopped. Extensive, progressive lung damage known to be of recent origin tended to improve promptly in a manner resembling the natural processes of healing. The drug, however, did not seem to have any rapidly effective curative action in these cases.



FOR CIVILIANS—100,000 telephones a month are now being manufactured by Western Electric, and this rate will be increased as rapidly as possible. In addition to telephone instruments, cables and complex switchboards are needed at many locations, and production will be increased with all possible speed.

These results lead the scientists to believe that streptomycin checks the growth of the tuberculosis germs, thus suppressing the symptoms of the disease, but that it does not actually kill the germs and in that sense cure the disease.

A few patients with tuberculosis of the skin were given streptomycin. Not enough time has elapsed to be sure of the permanency of the results in these patients, but in three of them inflamed lymph glands that were discharging pus cleared up promptly.

Streptomycin, obtained from a mold-like germ that lives in the soil, was discovered by Dr. Selman A. Waksman and associates of Rutgers University and the New Jersey Agricultural Experiment Station. His finding that the germ-chemical was a powerful weapon against tuberculosis germs in the test tube led to its trials by the Mayo scientists.

When it showed itself much less toxic and more powerful than any of the sulfone drugs previously used in treatment of experimental tuberculosis of guinea pigs, trials on human patients were started. In these Drs. Feldman and Hinshaw had the assistance of Dr. Karl Pfuetze, of Mineral Springs Sanatorium, and of colleagues at the Mayo Clinic, including Drs. Herman Moersch, Arthur Olsen, Harry Wood, Wallace Herrell, Fordyce Heilman, Dorothy Heilman, Robert Glover, R. L. J. Kennedy, L. F. Greene, W. G. Braasch, E. N. Cook, P. A. O'Leary, E. T. Ceder, L. A. Brunsting and F. A. Figi.

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MEDICINE

Blood Pressure Chemical

High blood pressure believed due to lack of essential substance like lack of insulin in diabetes. Search for practical replacement medicine.

➤ PATIENTS with serious high blood pressure, known medically as essential hypertension, may in future be taking regular doses of a new medicine to keep the blood pressure at safe levels just as diabetics today take regular doses of insulin to stay healthy.

This blood-pressure-lowering chemical is not yet ready for general use, but steps leading to its development have been taken by Drs. Arthur Grollman and Tinsley R. Harrison of the Southwestern Medical College in Dallas, Tex.

The incretory substance, as Dr. Grollman terms it, was first discovered in the kidneys. Medical men long ago believed the kidneys played a part in the development of high blood pressure, but the idea that these organs which act primarily as filters and waste handlers produce a chemical essential for maintaining normal blood pressure is relatively new. High blood pressure results, Dr. Grollman believes, when these organs are damaged so that they cannot produce this essential substance.

The substitution treatment, when it is ready for use, will help patients of all ages because it corrects the fundamental defect that causes the high blood pressure, replacing the substance which the patient's own kidneys fail to produce.

Right now Dr. Grollman is searching for a way to make this hormone generally available to the million or more essential hypertension patients in the nation. When made by extracting it from kidneys, 100 pounds of hog kidneys are needed to supply one day's dose for one patient.

Since the patients would have to go on taking the extract daily throughout life, this is obviously not a practical source.

The effective agent may also be prepared from the liver oils of certain fishes. Supplies of these fish liver oils are also somewhat limited and are needed as sources of vitamin A and vitamin D. (It is not the vitamins but another chemical in the oil which lowers blood pressure.) Certain plant oils may also ultimately be a source from which the compound may be made, Dr. Grollman stated in a report to the third annual hormone conference at Mont Tremblant, Canada.

If patients rush to the drug store to get one of the fish liver oils now marketed for their vitamin content, they are doomed to disappointment, Dr. Grollman warned. These oils do not contain the chemical in enough amount, if they contain it at all, to lower blood pressure.

Even with an abundant supply, patients would soon find it difficult to take nearly two ounces of oil daily, which is what would be required. So Dr. Grollman hopes the chemical itself can be extracted and put into a pill or some pleasant form of medicine.

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CHEMISTRY

Some Dried Vegetables Keep Better Than Others

➤ DEHYDRATED corn and sweet potatoes keep well, scientists of the U. S. Department of Agriculture found in studies of dehydration and prolonged storage of several common vegetables. Along with dehydrated beets and green beans, these four vegetables keep better than dehydrated white potatoes. But carrots, housewives should note, become poor or inedible sooner than any of these vegetables.

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ORDNANCE

Pill-Sized Primers

Weighing only 2.8 grains, they were used in the famous "goop" bombs which rained destructive blows on Japan before the atomic bomb fell.

➤ JAPAN'S cities flamed and smoldered to ashes for weeks before the two atomic bombs delivered their "haymaker" punches, under a rain of the most destructive incendiary missiles that war has ever known. Each of these "goop" bombs, as the GI's called them, was roused to demoniac life as it struck, by the tiniest detonating primer with which any bomb was armed. It was literally pill-sized, weighing less than half as much as an ordinary aspirin tablet.

Details of this primer have been released from military security restrictions by the War Department. The pinch of detonating chemical was contained in a copper-alloy cup only 3/32 of an inch high and 3/16 of an inch in diameter. Complete, it weighed 2.8 grains; a pound of the new primers sufficed to arm 2,500 fire bombs.

To make its action most sensitive, the primer was arranged so as to fire "backwards." Most primers, for example those in the bases of ordinary cartridges, are struck hard on their metal bottoms, and the flame of the detonating compound within bursts out of the open top to fire the main charge. In the "goop" bomb primer, the open top, covered only with a very thin brass foil, faced the firing pin, and when the pin struck into the touchy chemical within it exploded through the metal bottom, igniting the incendiary mixture in the body of the bomb.

The new primers were filled under conditions of extreme safety precautions, with the loading-machine operators working from behind steel barricades by remote control. Accident figures stayed at a gratifying "low" throughout the period of manufacture.

The Western Cartridge Company, at East Alton, Ill., produced them for the Chemical Warfare Service, and large quantities were also manufactured by the Army's own Picatinny Arsenal, in Pennsylvania.

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GEOGRAPHY

Canadian Leads Expedition Across Little-Known Land

➤ A CANADIAN missionary-botanist, Père Arthème Dutilly, has returned after leading an expedition across an almost unknown corner of Arctic America. With two other scientists and three Indian guides, he made the traverse across the northern tip of the Labrador peninsula, from the Gulf of Richmond on its western coast to Ungava bay on the Atlantic side. It was his twelfth successive trip to the Far North.

Père Dutilly brought out more than 4000 sheets of pressed plants, together with many other specimens of scientific value. These will be taken to the Catholic University of America in Washington, D. C., where he conducts his researches in the winter.

The journey of 400 miles took 22 days to complete, going by canoe up the Stillwater river, over the Divide, and down the Larch and Koksook rivers to Fort Chimo on Ungava bay. He describes the rivers as "very intriguing" — in one stretch of 54 miles there were 70 rapids, where the voyageurs had to choose between shooting and portaging. At Fort Chimo, after a wait of six days, he was able to find a seat on a plane which took him to Moncton, N. B., where he transferred to another plane to complete his journey to Montreal.

Père Dutilly's companions on his journey were the Abbé Ernest Lepage, director of studies at the Rimouski College of Agriculture, and Prof. Pierre Dagenais, geographer at the Jacques Cartier Normal School.

This is only the second time that this difficult traverse has been made. It was first made by Dr. E. A. Low, a geologist, in 1896.

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ENGINEERING

Electric Wires Insulated With Sodium Silicate

➤ THREE chemists employed by the Chicago plant of Western Electric Company, Dr. H. F. Fruth, Dr. W. O. Haas, Jr., and Dr. E. G. Walters, have assigned to that firm their rights in patent 2,384,542, on a method for insulating electric wires with sodium silicate, long familiar as a cheap adhesive and as a preservative for eggs. This compound is known to be a good insulator, but it has suffered from a double drawback. If applied to the wire in melted condition it becomes too brittle on hardening; if put on in a water solution it tends to take up water out of the atmosphere after it has dried. The three chemists have found that if the silicate is applied in solution and the coated wire then heated, the silicate remains as a good and flexible insulation, but is not hygroscopic. Best results are obtained with a sodium silicate in which the ratio of silicon to soda is relatively high.

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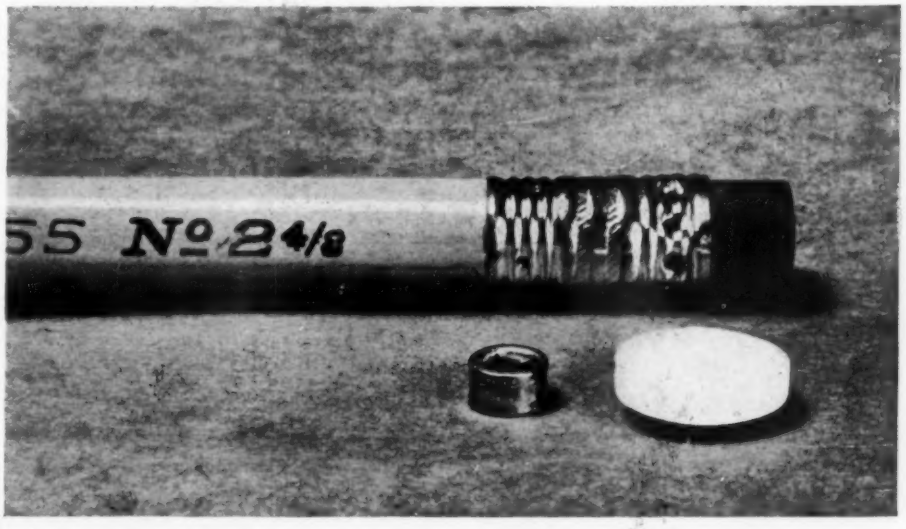

COMPARISON—Here is a 5-grain aspirin tablet, a pencil and the tiny primer used to detonate Uncle Sam's famous "goop" fire bombs. The primer weighs only 2.8 grains.

MEDICINE

Colchicine for Leukemia

Given when the disease was acute and soon after the symptoms had appeared, the patient's life was prolonged, although not saved.

➤ A NEW kind of attack on acute leukemia, fatal disease of the blood-forming organs, is reported by Dr. W. Harding Kneedler, of Philadelphia, in the *Journal of the American Medical Association*, (Sept. 22). This is the trial of colchicine in treatment of the disease.

In the case in which Dr. Kneedler tried it, the patient's life was perhaps prolonged although not saved. The drug was given when the disease was acute and soon after symptoms had appeared. The patient's downhill course slackened through eight months and there was a three-month period of improvement with gain in weight and strength before she slipped into the final stages of the disease.

Although Dr. Kneedler says that no conclusions as to the beneficial effects of colchicine can be drawn from this case, he believes further trial of the drug seems justified.

He used it at the suggestion of Dr. O. H. Perry Pepper, professor of medicine at the University of Pennsylvania School of Medicine, who had previously tried it in two cases. In one of these it had no effect but in the other there was complete abatement of symptoms for a time although this patient also subsequently died. There is one other report in medical literature of its trial in acute leukemia.

Colchicine is obtained from the autumn-flowering crocus of Europe and Asia. It has been used as a remedy for gout and rheumatism. Its effect in arresting the phase of cell division known as mitosis in plants and animals, and the special susceptibility of rapidly growing malignant tissue like cancer to colchicine, form the basis for its trial in leukemia.

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MEDICINE

Penicillin Inhalations

Can be given in doctor's office to help colds, bronchitis, asthma, pneumonitis and allergies. Brings chemical into direct contact with germs at invasion site.

➤ THE PATIENT who gets bronchitis, an asthma attack, pneumonitis, or even a cold or migraine headaches this coming winter may get relief through penicillin mist inhalation treatments given at his doctor's office or his own home.

These and other disabilities in more than 200 patients have been relieved or improved by this use of the mold chemical, technically known as aerosol penicillin, Dr. Herbert N. Vermilye, of Forest Hills, N. Y., reports in the *Journal of the American Medical Association*, (Sept. 22).

While penicillin is not effective against the virus of the common cold, Dr. Vermilye found that patients got over colds faster when given the penicillin mist inhalations. This was especially true in the case of persons who usually develop a heavy cough with much sputum a few days after the cold starts. Many were apparently well in one or two days although the treatment was continued for five days. Dr. Vermilye believes the reason for this rapid recovery is that the penicillin prevented secondary bacterial infections arising to complicate the cold.

Patients getting this treatment have a feeling of well-being and their appetites improve. This may be one factor, Dr. Vermilye suggests, that leads to the rapid recovery.

Migraine, high blood pressure, eczema, rosacea, colitis, extreme fatigue and even mild psychoneurosis are other conditions which were helped by the penicillin mist inhalations, Dr. Vermilye reports. He explains that this was because the conditions were the result of allergy to bacteria infecting the nose, throat and sinuses. Dr. Vermilye does not suggest that such conditions due to causes other than bacterial allergy would be helped by penicillin mist inhalations.

The fact that aerosol penicillin can be given in the doctor's office or the patient's home, instead of by hypodermic injection every three hours in a hospital, gives it many obvious practical advantages. From the standpoint of treatment, this use of penicillin has the advantage of bringing the mold chemical into direct contact with the disease germs at the site of their invasion of the body.

The rapid improvement in such stubborn conditions as intrinsic bacterial asthma is "notable," Dr. Vermilye states. By intrinsic bacterial asthma he means a kind believed due to chronic infection in the upper respiratory tract. The results in this condition, Dr. Vermilye states, encourage the hope that "at last a promising therapeutic weapon is available for that intractable condition."

Acute and relapsing pneumonitis due to various cocci, tonsillitis, sinusitis, sinobronchitis and pharyngitis with stomach and intestinal symptoms are other conditions in which Dr. Vermilye reports aerosol penicillin was beneficial.

The apparatus used for converting the penicillin into a very fine mist is available from most oxygen equipment companies and may be obtained for about $10 if a small portable oxygen tank is used, Dr. Vermilye states. With 10 or more outfits a physician can treat at least 20 patients a week without the assistance of a nurse, once the patient understands how to take the inhalations.

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ELASTIC—Bouncy sodium silicate is created when the silicate has dried to about 94% of its original content. The material can be rolled into a ball that will rebound like rubber.

CHEMISTRY

Bounces Like Rubber

Sodium silicate can be rolled up in a ball and bounced when a good deal of the water has been evaporated. No commercial use for this characteristic.

➤ THE SAME stuff that is used to stick corrugated paper together and to preserve eggs, as a trick can be made to bounce like rubber. No commercial use has been found, however, for this characteristic.

When a good deal of the water has evaporated from the well-known adhesive, sodium silicate, it can be rolled up in a ball and bounced. But instead of stretching when pulled, the material crumbles. These crumbs, not unlike those left after using an art-gum eraser, can be molded together again. If left piled on top of each other, they will soon run together to form a smooth, jelly-like mass.

This is just one of the few amazing forms of sodium silicate, chemically related to common sand and commonly sold for egg preservative under the name of water glass. Composed of alkali and silica, two dry silicates may be selected which, when mixed together, produce a liquid which can actually be poured out of the container. Two liquid silicates, on the other hand, can be combined into a solution which pours more slowly than either of the original ingredients.

Not only do some forms of silicate bounce like rubber, yet fail to stretch, but others stretch like taffy and simply refuse to bounce. Varying the relative amount of alkali and silica in the solution, as well as the proportion of water present, makes it possible to perform many apparently magical tricks with silicates, reports the Philadelphia Quartz Company, interested in developing new uses for this amazing material.

The bouncy silicate may be made from one of the highly silicious silicates. When water has evaporated so that it composes only about 65 per cent of the solution, little spheres of the material will bounce when dropped. It looks like cloudy glass and breaks just the way glass does, with a shell-like fracture. If left unprotected in the air, the semi-solid silicate dries out rapidly and becomes brittle.

When the soda-silica ratio is one to one-and-a-half, if water forms only about one-third of the solution it can be pulled into long threads. Sticky to the touch, this semi-solid silicate will not bounce. If chilled a little, it becomes quite hard.

With silicates it is possible to mix two solids and get a liquid. When the bouncy silicate is mixed with an equal amount of small crystals of silicate of soda, the material will pour slowly if the crystals were composed of about one-fourth alkali, one-fourth silica and one-half water. It takes vigorous mechanical beating to produce the liquid, but with patience a soupy solution develops. On continued stirring this thins out to a watery fluid.

A solid can be made by adding liquid caustic soda (though not a silicate, it is an allied product) to a liquid silicate containing slightly more silica than the taffy-like solution referred to above. When the caustic soda is at a temperature of 50 degrees Fahrenheit or less, the mixture freezes solid at room temperature.

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Opossum is Missouri's most abundant fur-bearing game but it is hunted principally for sport and for its edible meat.

***LIQUID FROM SOLIDS**—A watery substance is produced by mixing the bouncy silicate with small crystals of metasilicate, (left). There is no magic involved, nor is the mixture heated or cooled. When vigorously beaten together, the solution pours because by combining silicates of two extremes in composition, a liquid intermediate product is obtained. Photographs by Fremont Davis, Science Service staff photographer.*

PUBLIC HEALTH

Expectation of Life In U. S. Has Increased

➤ THE EXPECTATION of life for industrial workers in the United States actually increased during the war. Rising to 64.4 years in 1944, it was about a half year more than in 1943 and a full year greater than in 1941, our last year of peace, as reflected in the experience of industrial policy-holders of the Metropolitan Life Insurance Company.

Last year the expectation of life for girls of 20, namely 51.35 years, was almost three-quarters of a year greater than in 1941. For insured white males of the same age, just entering their prime, the expectation of life in the war year 1944 was 46.4 years, about one-fifth of a year more than during the last year of peace. Military and civilian deaths from enemy action were not included in the study.

The present situation among colored policyholders, which roughly corresponds to that of whites about two decades ago, shows an even more marked improvement. One and one-third years were added to the life expectation of both males and females during the past three years. Colored males of 20 in 1944 had an expectation of life of 43.42 years, and colored females of the same age an expectation of 45.48 years.

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CONSERVATION

Standard Specifications For Telephone Poles

➤ TELEGRAPH, telephone and other wood poles will soon have to comply with standard specifications prepared under the leadership of the American Standards Association at the request of the government. The prime purpose of the job will be to conserve natural timber supplies, and secondly to channel the production and use of poles so that all users will have a fair share of the available timbers.

"War needs have depleted our timber supply to an extent that we do not yet fully realize," Dr. R. H. Colley of Bell Telephone Laboratories states. Civilian use of poles was cut in half during the war, leaving a big pent-up demand now that restrictions are removed. It is estimated that at least 4,000,000 poles a year during the next few years will be required.

The new specifications will cover wood poles from jack pine, red pine, western white pine, inland types of Douglas fir, western hemlock, western larch, and certain miscellaneous species. The specifications will aim at treatment of every pole with wood preservatives so that the poles will last as long as possible.

The specifications, also, will cover prohibited and permitted defects, such as sap stain, twist grain, insect damage, knots and scars. Such matters as manufacturing, dimensions, storage, and handling will be covered.

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NUTRITION

Skipping Breakfast Gives "All-Gone" Feeling

➤ AS THE season of dark, chilly mornings begins, many persons find it harder than ever to get up in time to eat a good breakfast before starting to work or school. Breakfast-skippers, however, are likely to have an "all-gone" feeling and to slow down at work or study before the morning is over. Going without breakfast, moreover, means that the remaining meals of the day must be quite large in order to make up the deficit in nourishment.

Those who are in the habit of going without breakfast may not feel hungry on arising, even though it is 12 or 14 hours since their last meal. The thought of food may induce distaste or even slight nausea. If you are in this class, you can acquire a good breakfast habit by gradual steps. Each morning eat a little more until you are eating a breakfast that furnishes one-third of the calories you need for the day's activities.

The lightest breakfast menu approved by nutrition authorities consists of fruit, cereal or bread and a beverage. This is considered satisfactory for a desk worker who eats an early lunch. It can be made more nourishing if the cereal or bread is whole grain, since then more body-building material and more B vitamins will be included in the meal.

Adding eggs, bacon or some other meat or fish increases the supply of body-building protein. A good breakfast also includes a glass of milk to supply calcium and the B vitamin called riboflavin. Without milk, it is hard to get enough of these nourishing items in breakfast or, for that matter, in the entire day's food.

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AERONAUTICS

Production Continues On Navy's Super Fighter

➤THE NAVY's newest carrier and land based fighter, the F2G, developed under great military secrecy, but completed too late to see action in the Pacific, will still be produced in limited numbers for Naval service.

Except for slight engineering changes in air intake ports, air-release gills, specially designed rudder and vertical tail stabilizer, its outward appearance closely follows that of the Chance-Vought F4U Corsair. Both planes are built by the Goodyear Aircraft Corporation.

Powered with a 28-cylinder Pratt-Whitney 3,000 horse-power radial engine, the F2G is said to have an initial rate of climb of 7,000 feet a minute, considerably greater than that of the latest jet-propelled planes in operation. Its range is 2,500 miles, and its maximum speed, with water injection, is 450 miles per hour at 16,500 feet. It is armed with six .50-caliber machine guns, eight rockets and two 1,000 pound bombs under the wings and provision has been made for substitution of additional rockets or drop fuel tanks for two half-ton bombs.

The original Vought Corsair, since early 1943 Navy's fastest carrier-based fighter, used by Marine Corps as well as Navy fighter pilots in the Pacific, maintained a high level of efficiency and stamina in combat as both fighter and fighter-bomber until the end of the war.

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IN SCIEN

BIOCHEMISTRY

New Germ-Stopper Found In Water-Chestnuts

➤ A NEW antibiotic, or germ-stopping substance resembling penicillin in its action, has been found by a group of four Chinese scientists in the small round tubers known as water-chestnuts and familiar to patrons of Chinese restaurants everywhere. The research team consists of S. L. Cheng, B. L. Cheng, W. K. Cheng and P. S. Tang, all of Tsing Hua University at Kunming. They report their results briefly in a letter to the editor of *Nature,* (Aug. 25).

Unlike penicillin, the newly discovered antibiotic is not soluble in organic solvents such as ether and benzene. It can be destroyed by moderate heating. War-caused lack of proper laboratory equipment has thus far prevented the workers from preparing it in purified form.

It has been given the name "puchiin," from the Chinese characters that stand for the plant from which it is derived. To botanists it is known as *Eleocharis tuberosa;* it is a member of the sedge family.

Science News Letter, September 29, 1945

CHEMISTRY

New Method Offered For Obtaining Sulfur

➤ SULFUR, one of the commonest and most useful of chemical elements, can be salvaged from foul-smelling hydrogen sulfide by a newly patented process developed by Minor C. K. Jones of Mountainside, N. J.

Hydrogen sulfide is a problem product of many industrial processes, such as oil refining and making coal gas. It is also present in quantities in some natural gases. It is poisonous, and besides, it smells like rotten eggs, so that nobody wants it around.

Mr. Jones' method is to put it with another sulfurous gas, sulfur dioxide, in the presence of a catalyst at high temperature and under pressure. The hydrogen from the one gas and the oxygen from the other combine to form water, and the sulfur from both comes out uncombined and in a high state of purity.

Rights in this patent are assigned to the Standard Oil Development company.

Science News Letter, September 29, 1945

E FIELDS

GENERAL SCIENCE

President Urged to Prevent Drafting of Scientists

➤ YOUNG scientists, future key men in the creation of new job-providing industries, should not be drafted for routine duty in armies of occupation, *Chemical and Engineering News* declares editorially. The editorial calls upon President Truman to intervene to this end, and adds that "if he fails among his overwhelming responsibilities to visualize the seriousness of the situation, then Congress must, without further delay, assert its authority and control the military before well-considered plans for full employment are made largely valueless and the future of America is placed in jeopardy."

The journal calls attention to the present grave lack of trained scientists for research and teaching tasks, caused by the indiscriminate drafting of young men away from their laboratories and classrooms during the war emergency, and comments sharply on "the unwillingness of the Army to interpret intelligently the Selective Service Act." No emergency exists now that might give even the color of an excuse for a repetition of this blunder, it is pointed out. Instead, it is highly important that scientifically talented young men be encouraged and helped to complete their training without interruption, so that the present gap in America's ranks of researchers may be closed up as soon as possible.

Science News Letter, September 29, 1945

AERONAUTICS

Airliner Able to Circle Globe in 45 Hours

➤ AROUND the world in 45 hours—New York to London in nine, or to Mexico City in five hours—may soon be normal schedules for the Republic Rainbow, 40-passenger luxury airliner under development in Farmingdale, N. Y., by the Republic Aviation Corporation.

Believed to be the fastest transport plane ever conceived, the Rainbow's four radial engines will permit flight around or over the most inclement weather, carrying a crew of seven, 1,600 pounds of baggage and 1,700 pounds of cargo in addition to the 40 passengers.

Just as Republic's fighter, the Thunderbolt, was built to meet definite military requirements, the Rainbow is being especially designed and constructed after a careful survey of the needs of the airlines, and the postwar expectations of veteran air travelers. In addition to war-tested principles of superior construction, numerous exclusive innovations will assure reliability and safety. The noise-proof, pressurized cabin, finished in harmonious textures and colors, will feature complete dining facilities, lounge, bar, plane-to-ground telephone, motion pictures and fluorescent lighting, assuring complete comfort regardless of altitude.

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BOTANY

Dogwood Tree Bears Holly-Like Berries

See Front Cover

➤ A GREAT many people do not realize that the dogwood tree, so lovely in the spring, is also a striking sight in the fall. Red berries, four or six to a cluster, make a pleasing contrast to the dark green leaves. The photograph of the dogwood berries on the front cover of this SCIENCE NEWS LETTER was taken by Fremont Davis, Science Service staff photographer.

Science News Letter, September 29, 1945

HERPETOLOGY

Turtles Seldom Travel More Than 300 Yards

➤ TURTLES don't like to travel, at least Florida turtles don't.

They seldom go more than 300 yards, or less than one-fifth of a mile, from their original habitat. A turtle could easily cover this distance in a single day, states Lewis J. Marchand, University of Florida.

As many as 45 of these lazy travelers, 30 per cent of those found around Crystal Springs in Pasco County, whose tough shells Mr. Marchand marked with a hand-drill, were located during the following two years near this region.

Turtles released at Rainbow Run in Marion County, seemed more inclined to wander, several miles being not uncommon, Mr. Marchand reported to the American Society of Ichthyologists and Herpetologists. This sudden desire to travel, however, may have been largely due to the fact that a large number were released simultaneously at one spot, he states, although the character of the environment would also greatly influence the normal range of the turtles.

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CHEMISTRY

Metal Foils Keep Moisture from Walls

➤ ALUMINUM, copper and other metal foils may be used as a base for decorative wall finishes in future homes. New decorative finishes are being developed to replace conventional wallpaper because of the need to keep moisture in the room from seeping into the house walls, thus causing supporting timbers to rot.

Wallpaper applied with a vapor-resistant adhesive reduced 100-fold the amount of moisture vapor which passed through the wall, investigations at the National Bureau of Standards showed. Samples of the same wallpapers applied in the usual manner were found to allow about 38 ounces of moisture per square yard per day to pass through the wall. Wallpapers having a vapor-resistant coating on the face and applied in the usual manner likewise reduced 100-fold the amount of moisture vapor passing through.

So far, however, no vapor-resistant adhesive or coating has been found that does not disfigure wallpaper. Vapor-resistant plastic sheetings, though difficult to apply, were found quite satisfactory. Paint films and varnishes with and without metal powders were easy to apply, but gave variable results. Good aluminum, copper and other metal foils were in most cases impervious to moisture vapor.

Science News Letter, September 29, 1945

METALLURGY

Method for Recovering Magnesium from Scrap

➤ A METHOD for recovering magnesium from turnings, borings and other scrap in which it is mixed with other metals is the subject of patent 2,383,659, obtained by Y. E. Lebedeff of Metuchen, N. J., who has assigned his rights to the American Smelting and Refining Company. First a molten bath of a collector metal, like lead or zinc, is prepared. This is covered by a slag composed of a mixture of lead chloride or the like, mixed with common salt. The bath is heated to about 900 degrees Fahrenheit, and stirred vigorously, while the magnesium scrap is poured in. After about an hour of stirring, the slag will have collected practically all the impurities and can be skimmed off, leaving the magnesium behind.

Science News Letter, September 29, 1945

ASTRONOMY

Autumn Stars Now Shine

The first planets of October nights, Mars and Saturn, arise late. The stars of the Great Square and Northern Cross are visible.

By JAMES STOKLEY

➤ WITH NAKED-EYE planets absent from the evening sky in October, this is a good time to concentrate on getting acquainted with the stars of autumn, and the constellations into which they are formed. Some of these go back into the dim mists of antiquity, while a few have been added in more modern times. Often there is slight resemblance between the object after which it is named and the grouping of the stars. But perhaps we should not expect to find these things accurately pictured, any more than we would feel that the State of Washington ought to form a picture of George. The constellations are really areas of the sky, just as the states are areas of the United States, and the arrangement of the stars in them is as fortuitous as is the arrangement of the cities in the states.

Looking at the stars we are apt to see geometrical figures. High in the south, for example, there are four stars of similar brightness that form a square, indicated on the map as "Great Square." But this is not a true constellation. Three of the stars in it are in the group of Pegasus, the winged horse, and on the old star maps, which showed the actual figures around the stars, the horse was placed upside down for some unknown reason. The angular row of stars extending westward from the lower right-hand star of the square formed the animal's head, and the group of stars just above the word "Pegasus" on the map formed his forelegs. Only the front half of the horse was shown.

Many Stars

Alpheratz, the star in the upper left corner of the square, is in the constellation of Andromeda, the princess who, in mythology, was chained to a rock, to be rescued by Perseus, who is himself represented in another constellation nearby. He is to the northeast, just above the bright star Capella, in the figure of Auriga, the charioteer. To the left of Perseus is Andromeda's mother, the queen Cassiopeia, and still farther to the left is Cepheus, the king.

High in the west, next to Cepheus, we see Cygnus, the swan, in which there is a group of stars forming the Northern Cross, a much more perfect cross than its more famed southern counterpart, which is now invisible from most of the United States. Deneb is the bright star in Cygnus, at the top of the cross, which stands vertically at this time of year.

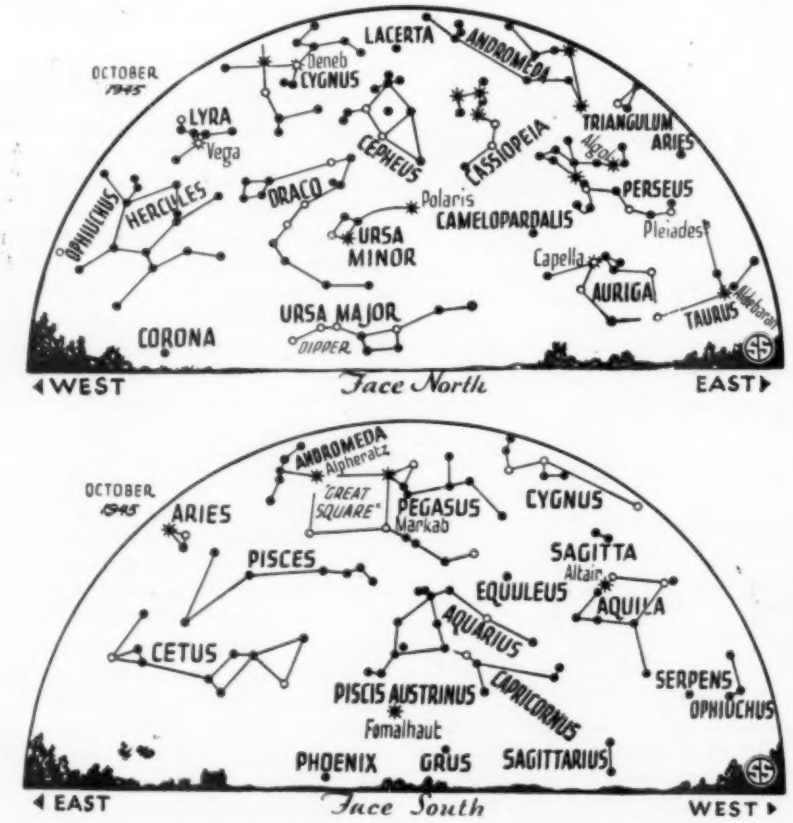
Below Cygnus is Lyra, the lyre, said to have been the one used by the mythological Orpheus, and in it is the bright star Vega. To the left of Vega is Aquila, the eagle, in which the first magnitude star Altair is found. Below Lyra is Herclues, the strong man, and next to him, to the right, is Draco, the dragon, which winds around Ursa Minor, the little bear, in which the pole star is located. Below Draco, now in its poorest position of the year, is the great dipper, in Ursa Major, the great bear.

Going back to the square, we find a sort of V-shaped group of stars below and to its left. These form Pisces, the fishes, one of the "zodiacal" constellations, through which the sun and moon and planets move. Aquarius, the water carrier, just below the head of Pegasus, is another, and so is the rather faint constellation of Capricornus, half fish and half goat, which is next to the right. To the left of Pisces is still another, Aries the ram, and then after that we have Taurus, the bull, with brilliant Aldebaran, just appearing in the east, a group which will become more and more prominent as winter comes.

"Water" Stars

For some unknown reason this part of the sky contains a number of constellations having some connection with water. We have already mentioned Pisces, Aquarius, Capricornus. Just below Aquarius is the bright star Fomalhaut, in Piscis Austrinus, the southern fish, and to the left, below Pisces, is Cetus, a sea monster, supposed to be the one that would have devoured Andromeda had Perseus not rescued her.

All these constellations are represented on the accompanying maps, which de-



☼ ✱ • • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

pict the sky as at 10:00 p.m., standard time, Oct. 1, and an hour earlier at the middle of the month. It is still later that the first planets arise. These are Mars and Saturn, both of which are in the constellation of Gemini, the twins, which is next to Taurus in the zodiac. Saturn is slightly the brighter of the two, but Mars is red in color and can easily be identified. Much brighter are two other planets which come up later—about two hours before sunrise—in the constellation of Virgo, the virgin. These are Jupiter, which will be seen at the end of the month, and Venus, with Venus considerably brighter. It is moving to the east, and will pass Jupiter on Oct. 30, so on that morning they will be very close together.

Hazy Light

In the constellation of Andromeda, if the night is dark and the sky is clear, it is possible to see a hazy spot of light. If you find this, you are probably seeing the oldest light that ever entered your eye, for the light waves that now fall on your retina, and excite the optic centers of your brain, have been on the way for the past three quarters of a million years. This hazy spot is the nearest of the other galaxies, great clusters of stars of which the whole Milky Way system, of which we are part, is another example. No other galaxy can be seen with the naked eye, though thousands are visible with large telescopes.

Before its nature was understood, this galaxy was often referred to as the Andromeda nebula, and it was considered to be similar to the other nebulae, such as one in the constellation of Orion which we see in the winter sky; that is, a huge cloud of gas, made to glow by the radiation of stars within it. It had been found that the Andromeda object, and others like it, had a characteristic spiral structure, and they were called spiral nebulae, but still they were believed to be part of the grind-stone-shaped galaxy, making up the Milky Way, and most of the stars that we see.

Separate Stars

Twenty years ago, with photographs made at Mt. Wilson Observatory, the Andromeda "nebula" was resolved into separate stars. Some of these were of a kind that permitted astronomers to tell their candlepower. Then, knowing how bright they looked, it was possible to figure their distance, and thus it became apparent that this "nebula" was beyond the limits of our system. There are a few others that are close enough to reveal separate stars, when observed with the biggest telescopes, but most of them are farther away. With the present world's largest telescope—the 100-inch at Mt. Wilson—galaxies can be recorded that are so far that their light, traveling 186,000 miles every second, takes 500,000,000 years to reach us. The new 200-inch, which will be completed at Mt. Palomar in southern California perhaps a year after work upon it is resumed, will reach out to twice this distance.

Celestial Time Table for October

Oct.	EST	
1	5:00 a. m.	Jupiter in line with sun
3	6:39 a. m.	Moon passes Venus
6	12:22 a. m.	New moon
8	8:00 a. m.	Moon farthest, distance 252,500 miles
14	4.38 a. m.	Moon in first quarter
21	12:32 a. m.	Full moon
	9:00 a. m.	Moon nearest, distance 221,700 miles
26	2:00 a. m.	Mars passes Saturn
26	11:48 p. m.	Moon passes Saturn
	12:25 a. m.	Moon passes Mars
	5:30 p. m.	Moon in last quarter
30	3:00 a. m.	Venus passes Jupiter

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Do You Know?

The color and flavor of *fats* are not of nutritive significance.

Coconuts are produced by four year old trees but full production is about the tenth year.

Tomatoes, pole beans, cucumbers and squash can be trained to the garden fence.

Asiatic *chestnuts* are being successfully grown in Ohio; they are resistant to the blight that killed practically all American chestnut trees since about 1900.

The strength of *copper* when cast, forged or in sheets is approximately 36,000 pounds per square inch; in the form of wire it is approximately 62,000 pounds per square inch.

Seaweed-derived *chemicals* have numerous uses and additional possible uses in the production of foodstuffs, textiles, transparent paper, plastics, sizing substances, and surgical, medical, and dental materials.

In spite of the availability again of natural rubber from the Far East, the *Castilla tree,* found from Mexico to Peru, may contribute to the future needs of the Western Hemisphere because its milky juice has certain special qualities.

NATURAL HISTORY

NATURE RAMBLINGS
by Frank Thone

Naturalists Needed

➤ LITTLE ISLANDS by the hundred have been dropped into Uncle Sam's lap by the collapse of Japan's far-flung but flimsy ocean empire. For some of them we had to fight fiercely and bloodily, but aside from these key positions there are many other atolls and jutting tops of submarine volcanoes which we shall have to administer.

All these islands have their populations of plant and animal life, and their fringes of swarming marine organisms. Some of these areas are rich in species, some are literally bits of ocean-surrounded desert. But all will prove interesting to anyone who looks at them with the eye of a naturalist—no matter how modest his formal training. The young men of our peace-time Army who may be sent to garrison them can escape island boredom and make really worth-while contributions to knowledge by making collections and studying and photographing the constantly changing life that surrounds them.

Easiest things to collect, probably, are seashells. All you need to do is comb the beach systematically, examining your finds critically and keeping only those that are not cracked or chipped. The more fragile shells should be packed in some soft material. Cotton is ideal, but if that is lacking crumpled paper will do.

Pressed specimens of land plants are easy to prepare, too. A plant press, that will do as good work as any professional botanist's equipment, can be improvised out of pieces of thin crating material and sheets of corrugated cardboard saved from empty cartons. A sheet of ordinary newspaper, folded once, is exactly the right size for the standard herbarium specimen.

If you want to pickle small fish, lizards, and some of the strange animal forms that swarm in the reef waters, you will need a supply of alcohol or formaldehyde—and these are as a rule not easy to obtain under island conditions. But if you can get them, you needn't worry about museum jars. Empty glass containers of any kind will do—pickle bottles and screw-top jars for the larger specimens, discarded medicine vials for the smaller things.

Simple manuals and guides for collectors have been prepared by a number of museums in this country; most of them can be obtained free. And if you cannot identify your specimens yourself, the museums will be glad to receive duplicate specimens and supply the names from them.

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CHEMISTRY

New Process Offers Uncaked Frozen Foods

➤ PACKAGES of frozen foods need not be solid bricks, as they familiarly are today. They take this form, Frank W. Knowles of Seattle states in the preamble to his patent 2,385,140, because they are put into freezing trays still covered with water from the washer, and this water sticks them together when it turns to ice. In his new process, Mr. Knowles keeps the food pieces constantly agitated, while he passes them first through a nearly saturated atmosphere where each piece becomes covered with an individual glaze of ice or frozen sugar syrup, then through a drier atmosphere where the freezing process is completed. Rights in this patent are assigned to the Beltice Corporation, of Seattle.

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The Alabama *flake-graphite* industry has flourished only in time of war when importations of the material, particularly from Madagascar, have been cut off or greatly curtailed.

Have you a son or daughter interested in SCIENCE?

IF SO, ask your child to give this page to a science teacher, or scout master, or to any adult awake to the possibilities of developing young minds to scientific understanding. SCIENCE CLUBS OF AMERICA will help such a person organize a science club.

Young people use their spare time learning in these clubs, and have fun while learning. Read below the sort of intelligent fun science clubs provide; then *see that this page is given to an interested person*, so that he can send for the free, useful handbook giving information on how to organize a science club.

Andover, Massachusetts

PHILLIPS ACADEMY SCIENCE CLUB, *Elbert C. Weaver*, Sponsor. 15 members, boys. Each member has an interest of his own, such as: isolation of metallic beryllium, building a model dirigible, constructing an electric furnace, mathematical analysis of wave patterns, casting brass, preparation of explosives, making rain gauges, lens and mirror grinding, dismantling motors.

Lawrence, Kansas

JUNIOR ACADEMY CLUB, H. S., *Miss Edith Beach*, Sponsor. 11 boys, 3 girls. Their programs of demonstrations and reports on work in chemistry, testing cloth, dissection of animals, penicillin, plastics, sulfanilamide, dyes and quinoline, are open to the public. At one program each year the local Kiwanis Club awards cash prizes.

Deming, Washington

SCIENCE CLUB, Mt. Baker H. S., *Miss Dorothy Massie*, Sponsor. 63 boys, 14 girls. They have constructed for their science department the following equipment: a slide and film strip projector opaque projector, delineascope, induction coil, incubator, dehydrator, electric furnace, micro projector, photo microscope, wind tunnel, radios, code oscillator. Club does photography for the school annual and electrical repair work; gives an assembly program, holds a community open house. Some members are lab assistants. Members like to construct lab equipment because it makes science more practical and saves money for more equipment.

Port Washington, New York

RETORT CLUB, H. S., *Edward Pickett*, Sponsor. 12 boys, 5 girls. Established 16 years. They concentrate entirely on chemistry and do experiments at every meeting. They make soil tests for residents of the community to help them get fullest yields from their gardens.

Rivers, Arizona

CANAL STUDENTS OF SCIENCE, Canal Elementary School, *Miss Alice J. Marshall*, Sponsor. 35 boys. During the summer months they collect and mount insect specimens common to the southwestern desert. During the winter they experiment in the field of elementary chemistry.

Rush City, Minnesota

FSA SCIENCE CLUB, H. S., *Walter E. Mielke*, Sponsor, 11 boys, 10 girls. They took over the "deteriorating" school museum, have cleaned, rearranged, renamed and added to the collections. It is now open to students and public. Members visit places such as a cement plant, creamery, mill, an orchard to watch spraying. The Club holds a Fair featuring garden products and plant hobbies.

Boyertown, Pennsylvania

SCIENCE CLUB, H. S., *Miss Winifred Y. Moyer*, Sponsor. 20 boys. They study aviation history, make models, fly model planes, hold identification contests, display models in a downtown store window. They built an airplane model embodying the ideas of all members.

Houston, Texas

ALETHEIA CLUB, St. Agnes Academy, *Sister M. Stephana*, Sponsor. 34 girls. Because many want to be doctors, nurses or laboratory technicians, best-liked programs are on medicine, penicillin, plastic surgery, cinchona planting. They investigated the use of the Chinese tallow trees, growing well in the area, as a source of oil and soap. While this didn't prove practical on a commercial scale, they made candles from the oil, used the wood for printing blocks and the leaves for dye. The chemists they consulted while making their investigations became interested in the Club and have started them on new lines of study of other plants nearby.

Santa Maria, California

SCIENCE CLUB, H. S., *W. D. Steimle*, Sponsor. 6 girls, 12 boys. Favorite subjects: electricity, chemistry, radio, astronomy, meteorology, aeronautics. The group visited an air base meteorology station; a naval base to see dredging; a sugar refinery; and an oil well to observe drilling. The Club completed a six-inch reflecting telescope; is now constructing a seismograph. From their meteorology station they "predict" weather. Their president, who was awarded an honorable mention in the annual *Science Talent Search*, did important work in the solidification of mud.

Brooklyn, New York

SCIENCE WORKSHOP, Brooklyn H. S. of Automotive Trades, *Robert R. Peterson*, Sponsor. 10 boys. For the 3 years of its existence the Club has put on an auditorium science program each term. Members build model airplanes, repair electrical equipment for the school and for the homes. They make showcase exhibits and animate them. They put science puzzles in their showcases and offer prizes for the best solutions of them. They run the school's weather bureau and visual aid equipment. They take part in Parents' Night demonstrations. In their meetings they practice the demonstrations they give later before the school assembly.

This handbook tells how to start

To SCIENCE CLUBS OF AMERICA, 1719 N Street, N. W., Washington 6, D. C.

Please send me free a copy of "How to Organize and Activate Your Science Club" and include further information about membership without charge in SCIENCE CLUBS OF AMERICA.

*Name of Sponsor*_____ *Position*_____

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*City*_____ *Zone*_____ *State*_____

• Books of the Week •

➤ THE SOIL has long been recognized as a great reservoir of fungi; they are among the most active organisms of decay, and they invade man's domain as causes of spoilage and, occasionally, of disease. Latterly some of them have received much notice as sources of antibiotics. Useful, therefore, as well as timely, is the appearance of a new MANUAL OF SOIL FUNGI by a well-known mycologist, Joseph C. Gilman. It is a book primarily for the professional botanist, giving detailed description of all species at present known. (*Iowa State Coll. Pr.*, $5.)

Science News Letter, September 29, 1945

➤ WITH MANKIND sobering up after the greatest orgy of self-slaughter in its bloody history, and ruefully resolving to at least attempt some kind of warless international order, one of the things that can be expected is international cooperation in wildlife conservation. Coming just in time to serve as a handbook in such an effort is a thorough-going review of all known facts about the status of mammals of the Eastern hemisphere: EXTINCT AND VANISHING MAMMALS OF THE OLD WORLD, by Francis Harper. The literature has been very thoroughly searched for records of last specimens taken in any given region, and for estimates of chances of survival where any remnants of a species are left. Careful descriptions are supplemented with many text figures. (*Amer. Comm. for Internat. Wild Life Protection*, New York, $4).

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➤ MONUMENTS of American antiquity merit monumental treatment in their published descriptions; and one of them, at least, receives such treatment in the double volume, TIHUANACU: THE CRADLE OF AMERICAN MAN. The author, Prof. Arthur Posnansky of the University of La Paz, has devoted years to the broadest possible study of the ruins of this ancient culture center on the shores of Lake Titicaca, and he has set forth his facts and opinions with greatest care, garnished his pages with sumptuous illustrations. The book is bilingual, with the English translation and the Spanish original in parallel columns. (*J. J. Augustin*, $25).

Science News Letter, September 29, 1945

➤ MANY BOOKS about weapons have come out in the past half-dozen explosive years; one of the best of them, for persons unversed in the technicalities and complexities of modern ordnance, is PRINCIPLES OF FIREARMS, by Charles E. Balleisen (*Wiley*, $2.50). It assumes no knowledge whatever on the part of the reader, and tells the whole story from the beginning in the simplest and plainest English. All the illustrations are diagrams of a corresponding simplicity.

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➤ THE WAR may be over, but we have by now surely learned prudence; we shall keep our powder dry and our sighting eye in trim. For peacetime training of new marksmen, as well as for the improvement of veterans' shooting, there is a timely and useful book, PRACTICAL MARKSMANSHIP, by M. M. Johnson, Jr., well-known expert-at-arms. (*Morrow*, $2.50).

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➤ ANIMALS, and particularly what animals do and why they do it, are the subject of Ruth Crosby Noble's THE NATURE OF THE BEAST (*Doubleday*, $2.75). Instincts, emotions, intelligence and its testing, animal play, mating behavior and home-making are among the subjects discussed.

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• Just Off the Press •

AMERICAN AIR NAVIGATOR—Charles Mattingly—*Ziff-Davis*, 229 p., illus., $6. A training text for instructional purposes and a reference source for professional navigators.

THE FORTRESS ISLANDS OF THE PACIFIC—William Herbert Hobbs—*J. W. Edwards*, 186 p., illus., $2.50.

HOW A BABY GROWS: A Story in Pictures—Arnold Gesell—*Harper*, 77 p., $2. Over 800 photographs arranged and interpreted with the assistance of Katherine Gesell Walden.

THE LIFE HISTORY OF AN AMERICAN NATURALIST — Francis B. Sumner — *Cattell*, 298 p., $3.

MINERALS OF MIGHT—William O. Hotchkiss—*Cattell*, 206 p., $2.50. A history of minerals and their influence on civilization.

NAMES ON THE LAND—George R. Stewart——*Random House*, 418 p., $3. A historical account of place-naming in the United States.

NEW DIRECTIONS IN PSYCHOLOGY—Toward Individual Happiness and Social Progress —Samuel Lowy—*Emerson*, 194 p., $3.

PEGUCHE, CANTON OF OTVALO, PROVINCE OF IMBABURA, ECUADOR — Elsie Clews Parsons—*Univ. of Chicago Press*, 225 p., illus., $3. A study of Andean Indians. Ethnological Series, University of Chicago publications in Anthropology.

THE RIVER MATHEMATICS—A. Hooper—*Holt*, 401 p., illus., $3.75. A history of the development of mathematical ideas and processes over thousands of years.

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PHYSICS

Atom Bomb Benefits

Can be reaped right away, without waiting for atomic power. Will flow from new engineering principles, new equipment and new methods.

➤ AMERICAN industry and science can begin reaping the benefits of large-scale atom-splitting right now, without having to wait for the development of atomic power, A. L. Baker, general manager of the Kellex Corporation of Oak Ridge, Tenn., declared at a press conference in New York. These benefits will flow from the new engineering principles, new equipment and new methods which had to be used under the forced draft of war to produce the atomic bomb in time for use as a weapon.

Some of the beneficial by-products of the work on large-scale atom-splitting enumerated by Mr. Baker are:

Cheaper, more abundant sources of radioactivity for the treatment of cancer.

Improved methods for combating industrial hazards due to presence of poisonous substances.

High-vacuum, low-temperature dehydration of foods.

Improvements in vacuum distillation for the production of vitamins.

Better heat exchangers, new methods of separating gasoline fractions and more efficient mass-spectrum analysis for the petroleum industry.

New electronic techniques in high vacua for the electrical industry.

More efficient gas pumps; some of these, developed for this project, can deliver a stream of gas at a velocity greater than that of sound.

All told, about 5,000 new and improved products and procedures are now available to American industry, awaiting only governmental release for volume production, Mr. Baker stated. He especially emphasized the improvements that have been made in pumps, and declared that in 20 years the benefits accruing from this one source alone would probably be worth the outlay of $2,000,000,000 made by the government for the whole atomic bomb project.

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AERONAUTICS

New Advanced Plane For Private Flying

➤ WITH deliveries expected to be made soon, Stinson's new four-place Voyager 150 will be among the first postwar personal planes in the $5,000 bracket to take to the air.

Typical of America's new peacetime light planes, the Voyager's 150 horsepower Franklin air-cooled engine makes possible top speeds of 133 miles an hour, 14,000 foot service ceiling, rate of climb at 770 feet a minute and a range of 500 miles at 125 miles per hour.

Capable of landing on a 230 foot field, it has complete contact flight instruments so arranged that additional instruments may be installed by those who contemplate night flying or flights solely by instrument.

A recent survey made of private plane operators indicate that among the additional instruments mostly in demand are two-way radios, directional gyros, drift indicators and turn and bank indicators, as well as audible stall warnings, level flight and flap adjustment instruments.

With more planes in the sky, the next few years will probably see less of the "hit and miss" prewar flying and private plane owners, operating under strict navigation regulations, may be under constant control of ground stations.

Science News Letter, September 29, 1945

ENGINEERING

Automotive Council To Be Dissolved

➤ THE AUTOMOTIVE Council for War Production, after nearly four years of activity in the war effort, will soon be dissolved, it is announced by Alvan Macauley, its president. The reason is that the need for this voluntary organization of 654 manufacturing companies no longer exists now that the war is over.

This organization was created soon after Pearl Harbor to pool the mass-productive know-how of all the American manufacturers of motor vehicles, together with makers of trailers, bodies, automotive parts and accessories, and the major producers of automotive tools and dies, jigs and fixtures, and special purpose machinery.

At the time of the organization of the council it was agreed to dissolve when the war was over. It was created, according to Mr. Macauley, "for the purpose of arming our country more effectively for its deadly competition with the Axis enemies.

"We pledged," he said, "that the total productive power of this competitive industry would be applied, on a voluntarily cooperative basis, to the huge task of winning the war as quickly as possible."

Science News Letter, September 29, 1945

Codliver oil tastes better when cold.

•New Machines and Gadgets•

❁ *CAMERA SUPPORT, worn on top of the head under a hat, permits taking of secret pictures. The hat has a hole in front of the lens, and the cord to snap the camera extends to the lapel of the coat. The support holds the camera so that it is focussed on the same object as are the eyes of the user when looking directly at the object.*

Science News Letter, September 29, 1945

❁ *LADY'S HANDBAG has at its bottom a long cylindrical compartment of a stiff material, long enough and big enough to hold a modern full-sized closed umbrella. The umbrella is inserted in one end of the bag through a circular opening, which is fitted with a neat unnoticeable cover.*

Science News Letter, September 29, 1945

❁ *ELECTRIC FAN, that "spirals" the air forward as in a miniature tornado, more than doubles air delivery and air movement over conventional straight-line draft fans. An injector-cone housing of the fan blades and motor imparts the swirling action.*

Science News Letter, September 29, 1945

❁ *LOW PLATFORM on a propelling track assembly, similar to that of a tank, is just large enough to carry forward in battle a single soldier lying on his stomach. It is powered by a small motor between the soldier's feet.*

Science News Letter, September 29, 1945

❁ *WINDOWS may be strips of plate glass arranged like the familiar Venetian blind, but which will not raise or lower.*

The strips can be turned at an angle to admit air, and closed tightly to exclude cold and rain. Lower louvers in the window pictured are of chipped glass to assure privacy.

Science News Letter, September 29, 1945

❁ *GARMENT-protecting hangar consists of a stiff paper back with a strip of wood at the top, on which an ordinary hanger is suspended, and two paper wings that fold over the front to complete the enclosure. Top projecting pieces on the wings fold over the wooden strip to keep out dust and dirt.*

Science News Letter, September 29, 1945

❁ *CARGO container, that floats slowly to earth from an airplane without a parachute, is a one-foot square box 34 inches long with collapsible rotors, or wings, on two sides which open out when the package is dropped. The wings are so pitched that the box rotates as it falls.*

Science News Letter, September 29, 1945

❁ *PROTECTIVE SHIELD, to be worn over the shoulders by patrons in beauty parlors, has a suspended bib with pockets on the front. The pockets are for the convenience of the operator, to hold such accessories as curlers and combs. Shield, bib and pockets are made of a water-resistant fabric.*

Science News Letter, September 29, 1945

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 278.

Question Box

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CHEMISTRY

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HERPETOLOGY

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MEDICINE

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ORDNANCE

What detonator weighs only 2.8 grains? p. 197.

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